

### REMARKS

The undersigned attorney appreciates the courtesy extended by Examiner Wilkens during their recent discussion of the present application.

All prior rejections have been withdrawn. Prior to the present response, it was understood that claims 124-153 were pending. The Office Action Summary however indicates that claims 124-137 and 140-153 are pending. Clarification is kindly requested.

Claims 124, 134 and 140 have been amended, claim 133 has been cancelled without prejudice, and claims 154-167 have been added. No new matter has been added by virtue of the new claims. For instance, support for the amendments appears at page 4, lines 12-13; page 9, line 1 through page 10, line 12; and the original claims of the application.

Claim 140 was objected to for a typographical-type matter. Claim 140 has been amended herein to obviate the objection.

Claims 124-132, 135 and 136 were rejected under 35 U.S.C. 102(e) over Dubin et al. (U.S. Patent 5,972,192).

Claims 124-132, 135 and 136 were rejected under 35 U.S.C. 102(e) over Uzoh et al. (U.S. Patent 6,117,784).

For the sake of brevity, these two Section 102 rejections are addressed in combination.

While Applicants disagree with the rejections, independent claim 124 (the only rejected independent claim) has been amended to recite subject matter of former claim 133, which former claim was not subject to rejection.

In view thereof, reconsideration and withdrawal of the rejections are requested.

Claims 137, 141-149, 152 and 153 were rejected under 35 U.S.C. 103 over Dubin et al. (U.S. Patent 5,972,192) in view of Dahms et al. (U.S. Patent 3,778,357).

As grounds for the rejection, at pages 4-5 of the Office Action, it is acknowledged that Dubin et al. does not disclose a brightener having a formula  $R'-S-R-SO_3X$ , but the position is taken that Dahms et al. reports sodium 3-mercaptopropane-1-sulfonate, and that it would have been obvious to incorporate that Dahms et al. compound into the Dubin et al. composition.

The rejection is traversed.

Respectfully, the proposed combination of Dubin et al. and Dahms et al. is not proper for purposes of a Section 103 rejection.

Among other things, Dubin et al. is specifically directed to a particular pulse-plating process of a dielectric layer. No incentive would have existed to carefully select a single component reported in the Dahms document and insert that selected single component into Dubin et al. Indeed, Dahms is clearly distinct and is directed to compositions that contain a phosphonium-type compound.

In view thereof, reconsideration and withdrawal of the rejection is requested.

Claims 137, 141-149, 152 and 153 were rejected under 35 U.S.C. 103 over Uzoh et al. (U.S. Patent 6,117,784) in view of Dahms et al. (U.S. Patent 3,778,357).

As grounds for the rejection, at pages 5-6 of the Office Action, it is acknowledged that Uzoh et al. does not disclose a brightener having a formula  $R'-S-R-SO_3X$ , but the position is taken that Dahms et al. reports sodium 3-mercaptopropane-1-sulfonate, and that it would have been obvious to incorporate that Dahms et al. compound into the Uzoh et al. composition.

The rejection is traversed.

This rejection suffers from deficiencies similar to those of the prior rejection. Thus, Uzoh is directed to a photoresist masking procedure where metal may be applied electrolessly or electrolytically. No incentive would have existed to carefully select a single component reported in the Dahms document and insert that selected single component into Uzoh. As discussed, Dahms is directed to distinct compositions that contain a phosphonium-type compound.

Reconsideration and withdrawal of the rejection are therefore requested.

Claims 124-132, 135, 137, 141-149, 152 and 153 were rejected under 35 U.S.C. 103 over Dahms et al. (U.S. Patent 3,778,357) in view of Dubin et al. (U.S. Patent 5,972,192). The rejection is traversed.

With respect to independent claim 124, as discussed above, that claim recites subject matter of former claim 133, which claim 133 was not rejected.

With regards to independent claim 137, Applicants reiterate and incorporate by reference here the above comments made with respect to the previously cited combination of Dubin et al. and Dahms et al. documents.

Additionally, as noted in the Office Action at page 6, "Dahms et al fails to teach plating on a semiconductor wafer substrate." Nevertheless, the position is taken that it would have been obvious to plate on such substrates.

Respectfully, that position does not withstand scrutiny. Rejections based on similar reasoning have been previously withdrawn during earlier prosecution of the present application. As discussed in Applicants' prior responses, persons skilled in the art recognize that plating on copper on a microchip wafer is considerably more difficult, and possess unique issues, relative to

plating copper on other substrates. See Applicants' response filed November 2, 2002 and the references discussed therein.

In view thereof, withdrawal of the rejection is requested.

Claims 124-132 and 136 were rejected under 35 U.S.C. 103 over Lyde (U.S. Patent 3,674,660) in view of Dubin et al. (U.S. Patent 5,972,192). The rejection is traversed.

Independent claim 124 (the only rejected independent claim) has been amended to recite subject matter of former claim 133, which former claim was not subject to rejection. Withdrawal of the rejection is therefore requested.

Claims 137, 141-149 and 153 were rejected under 35 U.S.C. 103 over Lyde (U.S. Patent 3,674,660) in view of Dubin et al. (U.S. Patent 5,972,192) and Dahms et al. (U.S. Patent 3,778,357). The rejection is traversed.

Lyde is distinct from Dubin et al. and Dahms et al. In particular, Lyde is directed to alkaline pyrophosphate compositions. Dubin et al. and Dahms et al. are cited for certain acidic compositions.

Contrary to the premise of the instant rejection, the skilled worker would not have had any incentive or expectation for success to selectively combine components of alkaline and acidic compositions.

Accordingly, reconsideration and withdrawal of the rejection are requested.

Claims 133 and 134 were rejected under 35 U.S.C. 103 over (1) Dubin et al. (U.S. Patent 5,972,192) or (2) Uzoh et al. (U.S. Patent 6,117,784) or (3) Dahms et al. (U.S. Patent 3,778,357) in view of Dubin et al. (U.S. Patent 5,972,192) or (4) Lyde (U.S. Patent 3,674,660) in view of

Dubin et al. (U.S. Patent 5,972,192), and further in view of Bernards et al. (U.S. Patent 5,068,013).

As grounds for the rejection, it is acknowledged that none of Dubin et al., Uzoh, Lyde or Dahms et al. report use of a suppressor agent. However, the position is taken that the Bernards document reports use of a surfactant and that it would have been obvious to incorporate that surfactant of Bernards into Dubin et al., Uzoh, Lyde or Dahms et al.

Claim 140 was rejected under 35 U.S.C. 103 over (1) Dubin et al. (U.S. Patent 5,972,192) in view of Dahms et al. (U.S. Patent 3,778,357) or (2) Uzoh et al. (U.S. Patent 6,117,784) in view of Dahms et al. (U.S. Patent 3,778,357) or (3) Dahms et al. (U.S. Patent 3,778,357) in view of Dubin et al. (U.S. Patent 5,972,192) or (4) Lyde (U.S. Patent 3,674,660) in view of Dubin et al. (U.S. Patent 5,972,192) and Dahms et al. (U.S. Patent 3,778,357), and further in view of Bernards et al. (U.S. Patent 5,068,013). The rejection is traversed.

As grounds for the rejection, it is acknowledged that none of Dubin et al., Uzoh, Lyde or Dahms et al. report use of a bis-sulfopropyl disulfide. However, the position is taken that the Bernards document reports use of a bis-sulfopropyl disulfide and that it would have been obvious to incorporate the bis-sulfopropyl disulfide of Bernards into Dubin et al., Uzoh, Lyde or Dahms et al.

For the sake of brevity, these two Section 103 rejections are addressed in combination. Such a combined response is considered appropriate because *inter alia* both rejections rely on the Bernards citation.

Each of the rejections is traversed.

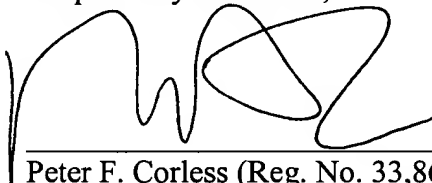
All of Applicants' pending claims are method claims directed to electrolytically depositing copper onto a semiconductor microchip wafer substrate having microvias or trenches.

The Bernards document pertains to plating on printed circuit boards. As discussed above and in Applicants' prior responses, persons skilled in the art recognize that plating on copper on a microchip wafer is considerably more difficult, and possess unique issues, relative to plating copper on a printed circuit board. See Applicants' response filed November 2, 2002 and the references discussed therein. Indeed, prior rejections based on reasoning similar to the present two Section 103 rejections have been withdrawn.

In view thereof, reconsideration and withdrawal of the rejections are requested.

It is believed the application is in condition for immediate allowance, which action is earnestly solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'P. Corless', is written over a horizontal line.

Peter F. Corless (Reg. No. 33,860)  
EDWARDS & ANGELL, LLP  
P.O. Box 55874  
Boston, Massachusetts 02205  
Tel. (617) 439-4444  
Fax (617) 439-4170